

We claim:

1. A method for treating a subject to stimulate hematopoiesis in the subject, comprising:  
administering to a subject in need of such treatment an amount of an agent effective to increase the number of hematopoietic cells or mature blood cells in the subject, wherein the 5 amount is less than 1 mg/kg body weight per day and wherein the agent is a compound of Formula I.
2. The method of claim 1, wherein the subject has an abnormally low level of hematopoietic cells and wherein the agent is administered in an amount effective to restore levels of a 10 hematopoietic cell-type to a preselected normal or protective level.
3. The method of claim 1, wherein the subject is administered at least two doses of the agent in an 18 hour period.
- 15 4. The method of claim 2, wherein the subject is neutropenic and wherein said amount is effective to restore a preselected normal or protective level of neutrophils.
5. The method of claim 2, wherein the subject has abnormally low levels of erythrocytes and wherein said amount is effective to restore a preselected normal or protective level of 20 erythrocytes.
6. The method of claim 2, wherein the subject has abnormally low levels of platelets and wherein said amount is effective to restore a preselected normal or protective level of platelets.
- 25 7. The method of claims 1, 2, 3, 4, 5 or 6, wherein the agent is ValBoroPro.
8. A method for shortening the time that a subject has an abnormally low level of hematopoietic or mature blood cells resulting from treatment with a hematopoietic cell inhibitor, comprising:  
30 administering to a subject in need of such treatment an agent in an amount effective to increase the number of hematopoietic cells or mature blood cells in the subject, wherein the administration of the agent is prior to or substantially simultaneous with

administration of the hematopoietic cell inhibitor, and wherein the agent is a compound of Formula I.

9. The method of claim 8, wherein the administration of the hematopoietic cell inhibitor causes an abnormally low level of hematopoietic cells in the subject and wherein the agent is administered in an amount effective to restore levels of a hematopoietic cell-type to a preselected normal or protective level.

10. The method of claim 9, wherein the subject is administered at least two doses of the agent in an 18 hour period.

11. The method of claim 9, wherein the hematopoietic cell inhibitor reduces in the subject neutrophils and wherein the amount is effective to restore in the subject a preselected normal or protective level of neutrophils.

15 12. The method of claim 9, wherein the hematopoietic cell inhibitor reduces in the subject erythrocytes and wherein the amount is effective to restore in the subject a preselected normal or protective level of erythrocytes.

20 13. The method of claim 9, wherein the hematopoietic cell inhibitor reduces in the subject platelets and wherein the amount is effective to restore in the subject a preselected normal or protective level of platelets.

14. The method of claims 8, 9, 10, 11, 12 or 13, wherein the amount is less than 1 mg/kg body weight per day.

25 15. The method of claims 8, 9, 10, 11, 12 or 13, wherein the agent is ValBoroPro.

16. A method for preparing a subject for treatment with a hematopoietic cell inhibitor, comprising:

30 administering to the subject prior to the subject receiving the hematopoietic cell inhibitor an agent in an amount effective to stimulate in the subject production of growth factor, wherein

the agent is a compound of Formula I.

17. The method of claim 16, wherein the growth factor is granulocyte colony stimulating factor.

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18. The method of claim 16, wherein the amount is less than 1 mg/kg body weight per day.

19. The method of claim 16, wherein the agent is administered to the subject by administering at least two doses of the agent in an 18 hour period.

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20. The method of claim 16, wherein the agent stimulates stromal cell production of growth factor.

21. The method of claims 16, 17, 18, 19 or 20, wherein the agent is ValBoroPro.

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22. A method for treating a subject to increase the number of hematopoietic cells in the subject comprising:

administering to a subject in need of such treatment an amount of an agent effective to increase hematopoietic cells in the subject,

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wherein the agent is administered in a first regimen consisting of 2 doses or 3 doses in an 18 hour period, and wherein the agent is a compound of Formula I.

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23. The method of claim 22, wherein the agent is administered in a second regimen consisting of 2 doses or 3 doses in an 18 hours period, and wherein, the second regimen is separate in time from the first regimen.

24. The method of claim 23, wherein the agent is administered in a third regimen consisting of 2 doses or 3 doses in an 18 hours period, and wherein, the third regimen is separate in time from the first and second regimens.

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25. The method of claim 24, wherein the agent is administered in a fourth regimen consisting of 2 doses or 3 doses in an 18 hours period, and wherein, the fourth regimen is separate in time

from the first, second, and third regimens.

26. The method of claim 25, wherein the agent is administered in a fifth regimen consisting of 2 doses or 3 doses in an 18 hours period, and wherein, the fifth regimen is separate in time 5 from the first, second, third and fourth regimens.

27. The method of claims 22, 23, 24, 25, or 26, wherein the subject has abnormally low neutrophils and, wherein said amount is effective to restore a preselected normal or protective level of neutrophils.

10 28. The method of claims 22, 23, 24, 25, or 26, wherein each regimen is less than 1 mg/kg body weight per day.

15 29. The method of claims 22, 23, 24, 25, or 26, wherein the agent is ValBoroPro.

30. A method for preparing a subject's cells for reintroduction into the subject comprising administering to the subject an agent in an amount effective to stimulate hematopoietic cells, then collecting hematopoietic cells from the subject, and reintroducing said collected cells into the subject, wherein the agent is a compound of Formula I.

25 31. The method of claim 30, further comprising *ex-vivo* culturing the collected cells in the presence of an amount of the agent effective to stimulate proliferation of said collected cells.

32. The method of claim 30, wherein the concentration of the agent in medium surrounding the collected cells is less than  $10^{-8}$  moles per liter.

30 33. The method of claims 30, 31, or 32, wherein the agent is ValBoroPro.

34. A method for stimulating growth factor production by stromal cells comprising: contacting the stromal cells with an agent in an amount effective to stimulate growth

factor production by the stromal cells, wherein the agent is a compound of Formula I.

35. The method of claim 34, wherein the stromal cells are an *in vitro* layer of stromal cells for supporting cell growth and further comprising culturing said stem cells in the presence of said 5 stromal cells.

36. The method of claim 34, wherein the stromal cells are *in vivo* in a subject.

37. The method of claim 34, wherein the growth factor is granulocyte colony stimulating 10 factor.

38. The method of claim 36, wherein the agent is administered to the subject in an amount less than 1 mg/kg per day.

15 39. The method of claims 34, 35, 36, 37 or 38, wherein the agent is ValBoroPro.

40. The method of claim 35, wherein the stem cells are cultured in an environment free of exogenously added growth factors.

20 41. The method of claim 35, wherein the stem cells are cultured in an environment free of exogenously added granulocyte colony stimulating factor

42. A kit for treating a subject to ameliorate the effects resulting from treatment with a hematopoietic cell inhibitor, comprising a package containing:

25 a first dosage of an agent and instructions for treating the subject with the agent, substantially simultaneous with or prior to treatment with the hematopoietic cell inhibitor, and a second dosage of the agent and instructions for treating the subject with the agent, only after treatment with the hematopoietic cell inhibitor,

wherein said dosages are in effective amounts and,

30 wherein the agent is a compound of Formula I.

43. The kit of claim 42, wherein the second dosage is between 2 and 7 regimens, each of said

regimens consisting of two or three doses of the agent for administration in an 18 hour period.

44. The kit of claim 42, wherein the second dosage is less than 1 mg/kg body weight per day.

5 45. The kit of claims 42, 43, or 44, wherein the agent is ValBoroPro.

46. The kit of claims 42, 43, or 44, wherein the kit is for treating or inhibiting neutropenia.

47. The kit of claim 45, wherein the kit is for treating or inhibiting neutropenia.

10 48. The kit of claims 42, 43 or 44, wherein the kit is for treating or inhibiting a platelet deficiency.

49. The kit of claim 45, wherein the kit is for treating or inhibiting a platelet deficiency.

15 50. The kit of claims 42, 43, or 44, wherein the kit is for treating or inhibiting an erythrocyte deficiency.

51. The kit of claim 45, wherein the kit is for treating or inhibiting an erythrocyte deficiency.

20 52. A kit for treating a subject having an abnormally low level of hematopoietic cells or mature blood cells comprising:

a packing containing a complete dosage for restoring at least protective levels of a hematopoietic cell or a mature blood cell type, the package consisting essentially of

25 a first dosage of an agent in an effective amount for administration to the subject during a first 18 hour period of a first day,

a second dosage of an agent in an effective amount for administration to the subject during a second 18 hour period of a second day,

30 optionally a third dosage of the agent in an effective amount for administration to the subject during a third 18 hour period of a third day,

optionally a fourth dosage of the agent in an effective amount for administration to the subject during a fourth 18 hour period of a fourth day,

optionally a fifth dosage of the agent in an effective amount for administration to the subject during a fifth 18 hour period of a fifth day,

optionally a sixth dosage of the agent in an effective amount for administration to the subject during a sixth 18 hour period of a sixth day,

5       optionally a seventh dosage of the agent in an effective amount for administration to the subject during a sixth 18 hour period of a seventh day,

      wherein the agent is a compound of Formula I and wherein the agent is present in an amount effective to restore a preselected normal or protective level of hematopoietic or mature blood cell-type.

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53.   The kit of claim 52, consisting essentially of only the first, second, third, fourth and fifth dosages.

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54.   The kit of claim 52, consisting essentially of only the first, second, third and fourth dosages.

55.   The kit of claims 52, 53 or 54, wherein each of the dosages consists of 2 or 3 doses of the agent for each respective 18 hour period.

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56.   The kit of claims 52, 53 or 54, wherein the amount of each dosages is less than 1 mg/kg body weight per day.

57.   The kit of claims 52, 53, 54, or 55, wherein the agent is ValBoroPro.

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58.   A kit for ameliorating on a subject the effects of a hematopoietic cell inhibitor comprising a package containing:

      a first dosage of an agent for administration to a subject during a first day, and

      a second dosage of the agent for administration to a subject during a second day,

      optionally a third dosage of the agent in an effective amount for administration to the

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      subject during a third 18 hour period of a third day,

      optionally a fourth dosage of the agent in an effective amount for administration to the subject during a fourth 18 hour period of a fourth day,

optionally a fifth dosage of the agent in an effective amount for administration to the subject during a fifth 18 hour period of a fifth day,

optionally a sixth dosage of the agent in an effective amount for administration to the subject during a sixth 18 hour period of a sixth day,

5       optionally a seventh dosage of the agent in an effective amount for administration to the subject during a sixth 18 hour period of a seventh day,

wherein the combined dosages are in amounts effective to ameliorate the effects in the subject of the hematopoietic cell inhibitor and wherein each dosage is less than 1 mg/kg body weight per day.

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59.      The kit of claim 58, consisting essentially of only the first, second, third, fourth and fifth dosages.

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60.      The kit of claim 58, consisting essentially of only the first, second, third, and fourth dosages.

61.      The kit of claims 58, 59, or 60, wherein each of the dosages consists of two or three doses of the agent for each respective day.

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62.      The kit of claims 58, 59, or 60, wherein the agent is ValboroPro.

63.      The kit of claim 61, wherein the agent is ValboroPro.